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RELATIONSHIP BETWEEN SOCIAL INFLUENCE AND VIDEO CONFERENCING USE: THE MODERATING AND DIRECT EFFECT OF CULTURAL FACTORS IN JORDAN

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ABSTRACT

User's perceptions and beliefs are known for their role in technology acceptance. Studies examining the effect of cultural values along with social influence in technology acceptance are rare. They focus on various types of technologies, contexts, and types of users yielding inconsistent and contradictory findings. No studies have been undertaken to research video-conferencing usage, particularly in Jordan. This study seeks to develop a conceptual model for examining the moderating and direct effect of both individualisms versus collectivisms and power distance cultural dimensions on the relationship between social influence and video conferencing usage in Jordan. The survey method adopts questionnaires as a technique to collect quantitative data. The collected data was analysed using SPSS. The findings show that social influence has a significant direct role on increasing video-conferencing usage. Furthermore, individualisms versus collectivisms were found to increase the video-conferencing use, whilst power distance was found to decrease it. However, they do not moderate the effect of social influence on video-conferencing use. This paper has important implications on both theoretical and practical portions of video-conferencing usage in manufacturing firms in Jordan.

Keywords: *Social Influence, Hofstede's Cultural Dimensions, Video-conferencing, Technology Acceptance Model (TAM), Jordan*

1. INTRODUCTION

User's perceptions of Information Technology (IT) are possibly affected by the characteristics of a technology, individual differences (e.g. experience usage of technology), degree of technology usage and workplace demands. However, social influence theories argue that user's perceptions could be affected by others' opinions and behaviours, and/or seeking information from others (e.g., superiors in organizational context) [1, 2]. Social influence reflects an individual's perception of the social force to act [3]. Social influence is a significant determinant on users' choice to use a technology [4].

IT acceptance and use is affected by national culture [5, 6], especially through the effect of social influence [3]. However, the effect of culture in IT has not been sufficiently measured [7]. Therefore, cultural influence on IT acceptance is still unknown, especially in developing countries [8]. [9] affirm that Middle Eastern people are collectivisms like the Chinese; they might use and accept IT as being more managed than individualisms, such as the Australian and American. [10] Asserts that the mobile phone is accepted technology for Italians, as they are from an individualistic culture. Also, both [11, 12] believe that the positive effect of social influence reported is because the cultures of China and Saudi Arabia are characterized as collectivistic, with high power distance. In the same way, [13, 14, and 15], claim that the logical reason behind the positive effect of social influence is the hierarchical context of investigation. It is worth mentioning that [16], has classified that Jordanian people are collectivisms with low power distance cultural values. Nevertheless, no study has been undertaken to examine the moderating and direct effect of individualisms versus collectivisms and power distance cultural dimensions on the relationship between social influence and video-conferencing usage, particularly in Jordan. Therefore, this study seeks to answer five research questions, these are: what is the direct effect of social influence on video

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conferencing usage in Jordan?; what is the direct effect of power distance on video-conferencing usage in Jordan; what is the moderating effect of power distance on the relationship between social influence and video-conferencing usage in Jordan?; what is the direct effect of individualism versus collectivism on video-conferencing usage in Jordan; and what is the moderating effect of individualism versus collectivism on the relationship between social influence and video-conferencing usage in Jordan?

2. PREVIOUS STUDIES ON SOCIAL INFLUENCE, AND CULTURAL FACTORS IMPACT ON IT USE

Studies on the adoption and acceptance of IT in organizational contexts have confirmed that examining the users' beliefs is the key to success implementation. It is dependent not only on the user's beliefs, but also on social influence. However, practical tests of social influence on beliefs toward IT reported contradictory results [1]. Several structural contexts could influence an individual's perceptions, actions, and experiences. The literature shows that social influence is one of the commonly measured factors in IT acceptance theories such as the Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), and Theory Planned Behaviour (TPB). Many studies explored the impact of social influence through adapting the TAM, and on various measures such as on user attitudes and behavioural intention to use IT. However, a meta-analysis was carried out by [17], which confirmed that social influence has a significant effect not just on the users' attitude and behavioural intention to use, but also on actual system use. Only a handful of studies have addressed the impact of social influence on technology usage. Some studies reported that social influence has a positive effect on technology usage in IT, such as [15] in internet usage in Pakistan; [18, 19] in IS; and [20] in e-mail and v-mail; and [1, 21] in IT. However, [20] found that social influence has no effect on v-mail usage in an organizational context. Likewise, a study conducted by [22] traced that social influence leaves no effect on e-learning system usage for students in China.

Recent research has highlighted the significance of examining Hofstede's cultural dimensions with the role of social influence on technology usage, such as [23, 24]. They affirm that users from different cultures are affected differently by social influence. Hofstede's cultural dimensions materialize as antecedent dimensions that possibly impact the strength of social influence on the use of any technology [25, 26, and 27].

A few studies have investigated the effect of the individualistic versus collectivistic cultural dimension whether directly or indirectly on technology use. For instance, [28] trace the positive effect of individualism values on PC usage. Similarly, [29] found that users with high individualism values would use IT more. Other studies have discovered the moderating effect of individualistic versus collectivistic values on the relationship between social influence and technology use, such as when [30] reported that collectivism users would be more persuaded by social influence in using IT.

The effect of power distance cultural dimension was also measured by several studies, whether directly or indirectly on technology use. For example, [28] discover that users with low power distance believe it would affect PC use negatively. In contrast, [31] reported that the high power distance values (of the Chinese) would decrease their e-mail usage. Similar findings were reported by [29] on IT usage. Some other studies have addressed the effect of power distance along with the impact of the social influence factor on technology use, such as [32], who report that the Japanese are from high power distance cultures, and thus social influence has a positive effect on IT usage, whilst the opposite holds true in the case of the British. Similar findings were reported in a study carried out by [30] in IT usage. On the contrary, [27, 33, and 34], reported no moderating effect by power distance.

Imperatively, there are limited studies addressing the impact of individualism versus collectivism, and power distance cultural dimensions along with social influence on technology usage. These studies gave findings which are lacking because of reporting contradictory results [35]. Furthermore, studies examining the effect of social influence have been conducted on different types of technologies, contexts, and type of users, which produced different results. For instance, [1] investigated the effect of social influence on IT usage for knowledge workers and students, and found that social influence could affect IT usage differently, depending on the types of users. As a result, to date, there is as yet no model developed to address the cultural values effect, with relation to social influence on video-conferencing usage, particularly in Jordan. Therefore, there is an urgent need to fill this gap. Thus, the objective of this

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paper is to develop a conceptual model for examining the direct and moderating effect of individualism versus collectivism, and power distance dimensions on the relationship between the social influence and video conferencing usage in the country. These two cultural dimensions (e.g., individualism versus collectivism, and power distance), are based on Hofstede's cultural theory. However, Hofstede's cultural theory comprises five cultural dimensions. This study will only focus on two of the factors following the suggestion made by [27], that these dimensions are the most expected to affect the social influence relationship with IT use.

3. CONCEPTUAL MODEL

This study is based on part of the model developed by [20], for developing a new conceptual model. [20] Extended the original TAM theory through hypothesizing the direct effect of social influence on e-mail and v-mail use. However, this study generalized several hypotheses that would ultimately affect the video-conferencing usage. The hypotheses are drawn to illustrate the new conceptual model proposed, which is shown in Figure 1.

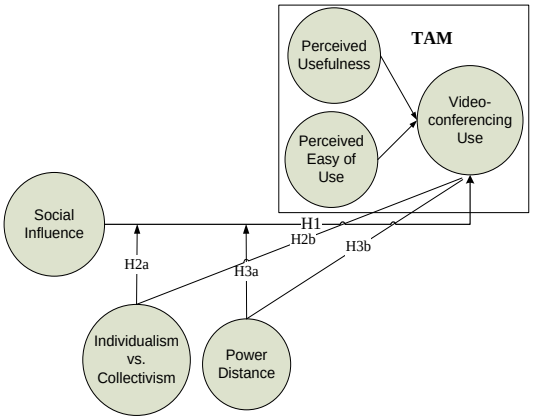

Figure: The Proposed Model

3.1 Factors Conceptualized in the Proposed Model

The adapted (conceptualized) factors in the new proposed model are to be tested in the formulation of hypotheses, thus, these factors should be defined from the perspective of this study, as follows:

3.1.1 Social influence

Social influence model of technology use has been developed by [36]. They propose that properties of any technology are different from an individual user to another and any context to another. In addition, users' use of a technology in preference to another for a particular transaction is possibly subject to not only the effect of that user's own opinion, but also the impact of team opinions and norms. The concept of social influence (also known as subjective norm) was defined as the user's feeling of whether they should or should not use a technology, because he/she is under the pressure of superiors and peers [20]. In this study, the social influence factor is the sole measured independent factor.

3.1.2 Power distance

Power distance refers to the degree to which less powerful individuals would accept that power is distributed unequally [37]. In the use of IT, users with high power distance values focus more on their community's reaction to the IT, and then adjust their reaction depending on their place within the hierarchical structure. Meanwhile, users with low power distance values are more independent on their IT use [27].

3.1.3 Individualism versus collectivism

Individualism versus collectivism is the extent to which individuals are believed to look after themselves or remain incorporated within a community [37]. In IT usage, users in high collectivism cultures do mind more about their community, and are more influenced by their peers and superiors through agreeing with their decisions and opinions. However, the opposite is the case for users in individualism cultures [27].

3.1.3 Video-conferencing use

Video-conferencing usage is the resulting factor determined by the perceived usefulness and ease of use in TAM, developed by [38]. Video-conferencing usage is the extent to which individuals use video-conferencing. In this study, video-conferencing usage is the sole dependent factor.

3.2 The Hypotheses Formulated

The four factors as discussed above are then tested using 5 hypotheses formulated for the study. These are:

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3.2.1 Hypothesis 1

$H_{1:}$ Social influence has a direct effect on video conferencing usage.

3.2.2 Hypothesis 2a

H_1: The user's cultural value of individualism versus collectivism has a moderating effect on the relationship between social influence and video-conferencing usage.

3.2.3 Hypothesis 2b

H_1: The user's cultural value of individualism versus collectivism has a direct effect on video-conferencing usage.

3.2.4 Hypothesis 3a

H_1: The user's cultural value of power distance has a moderating effect on the relationship between social influence and video-conferencing usage.

3.2.5 Hypothesis 3b

H_1: The cultural value of power distance has a direct effect on video-conferencing usage.

4. METHOD

A quantitative approach using a survey questionnaire is used as it is suitable when the factors to be surveyed have already been explored in previous studies. Furthermore, a survey questionnaire enables respondents to express their values, beliefs, and attitudes [39].

Since this study adopts a quantitative approach to collect data, a structured questionnaire (or closed-ended questionnaire) is most suitable to facilitate the respondents in answering the questions [40]. This study utilized two types of questions, namely multiple choice and Likert type scale. The questionnaire starts with questions related to the participants' demographic factors (i.e., personal information) followed by questions related to testing the hypothesis, as suggested by [41]. Respondents were asked to select one of the choices given, about gender, age, work experience, computer usage experience, video-conferencing accessibility, and nationality. It was necessary to ensure that respondents had access to video-conferencing and were Jordanian prior to proceeding with the analysis. Meanwhile, questions that test the hypothesis were adapted from previous studies such as social influence, individualism versus collectivism, and power distance from [42]; and video-conferencing use from [43], with some modifications that were essential to make appropriate questions for the aim of conducting this study.

The questionnaire was translated from English into Arabic because this study was carried out in Jordan (where Arabic is the official language), and thus, this provided a complete understanding of the questionnaire for the respondents. This study took into consideration suggestions by [41] to ensure the content of questionnaire questions, through ensuring that the language is easy to understand by the respondent, eliminated questions of the same purpose, removed questions in the form of general knowledge, being sensitive to the feelings of the respondents, and were appropriate in context. All the questions in the questionnaire were evaluated on a five point Likert type scale, namely; (1= strongly disagree; 2= disagree; 3= neutral; 4= agree; 5= strongly agree). A pilot study was carried out prior to the actual study to guarantee the reliability and validity of the questionnaire. Cronbach's alpha was calculated for Reliability testing and resulted in .84 for the entire instrument. Validity was executed by submitting the survey questionnaire to an expert panel to test the instrument's content. As a consequence, the survey instrument was found reliable and valid, hence ready to be distributed.

The questionnaires were personally administered to the targeted respondents (senior managers) in manufacturing firms in Jordan from 5th April until 18th July 2011. These senior managers were selected from 47 manufacturing firms of different manufacturing subsectors scattered throughout various regions in Jordan. A total of 1800 questionnaires were distributed but only 434 questionnaires were returned. The number of questionnaires returned fulfils the required sample size (385), as suggested by [40, 44].

5. DATA ANALYSIS

Demographic profile of the samples, scales reliability testing, exploratory factor analysis, and ultimately, hypothesis testing, are described as follows:

5.1. Demographic profile of the samples

Demographic profile of the sample's gender, age, work experience, and computer usage experience are reported in Table 1.

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Table 1: Summary of Demographic Profile of the Sample's Gender, Age, Work Experience, and Computer Usage Experience

Demographic Profile	Categories	Frequency	Percentage
Gender	Male	257	72.0
	Female	100	28.0
Age (year)	< 20	1	.3
	20-24	36	10.1
	25-29	112	31.4
	30-40	140	39.2
	41-50	52	14.6
	> 50	16	4.5
Work experience (year)	< 3	43	12.0
	4-6	71	19.9
	7-9	70	19.6
	10-12	71	19.9
	13-15	46	12.9
	> 15	56	15.7
Computer usage experience (year)	< 1	5	1.4
	2-4	51	14.3
	5-7	92	25.8
	8-10	83	23.2
	11-13	56	15.7
	> 13	70	19.6

5.2. Scales reliability testing

Cronbach's alpha value is 0.798 for the social influence, 0.714 for individualism versus collectivism, 0.739 for power distance, and 0.771 for video-conferencing use scales. Following [45], these values are considered within the acceptable level of reliability. Thus, these scales are reliable.

5.3. Exploratory Factor Analysis (EFA)

Principal Component Analysis (PCA) with Varimax rotation method was used to evaluate constructs validity. The method is to discover any possible item(s) with low and/or double loading, and the threshold Eigenvalue used is 1.0 [46, 47]. There was no low loading or double loading detected. In addition, the measure of sampling adequacy, namely Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity (BTS) were also taken into consideration. The value KMO is acceptable at 0.695. The BTS reflects significant results since the value is less than 0.05, thus EFA is considered proper for this study.

Table 2: Rotated Component Matrix and Communalities

	Components				Communalities
Items	SI	IC	PD	VU	.756
SI 1	.867				.741
SI 2	.855				.656
SI 3	.695				.576
SI 4	.618				.756
IC1		.750			.602
IC2		.766			.591
IC3		.661			.514
IC4		.733			.543
PD1			.798		.681
PD2			.684		.518
PD3			.715		.537
PD4			.775		.630
VU 1				.837	.765
VU 2				.848	.721

SI= Social Influence, IC= Individualism versus Collectivism, PD= Power Distance, VU= Video-conferencing Use

5.4. Hypotheses testing

This study uses linear standard and hierarchical regression to test the hypotheses. The result of testing the H1 hypothesis appears in Table 3, while H2a and H2b are shown in Table 4, and H3a and H3b can be viewed in Table 5:

Table: Results of Testing the Direct Effect of Social Influence on Video-Conferencing Use

Independent factors	Un-standardized coefficient	Std. Error
SI	.336***	.060
R^2	0.082	
F	31.798***	

SI= Social influence,

Significance levels are *** p < .001, ** p < .01, * p < .05

The regression results as shown in Table 3 indicate that the model with R-square value of 0.082 reflects that only 8.2% of variance in video-conferencing use is able to be explained by social influence factor. Statistic value F = 31.798 is significant, at $\alpha<0.05$. Thus, the model is capable of predicting the video-conferencing usage. Social influence is found to be a significant factor, where

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it would increase the use of video-conferencing, since the effect of social influence is positive (β=.336). Therefore, this result is consistent with the effect hypothesized in H1. Thus, the H1 is supported.

Table 4: Results of Testing the Direct and Moderating Effect of Individualism versus Collectivism on the Effect of Social Influence on Video-Conferencing Use

Independent factors	Un-standardized coefficient	Std. Error
SI	.323***	.061
IC	.242***	.092
SI X IC	.008	.118
R^2	0.100	
F	13.045 ***	

SI = social influence, IC = Individualism versus Collectivism, SI X IC = the interaction of social influence and Individualism versus Collectivism

Significance levels are *** p < .001, ** p < .01, * p < .05

As shown in Table 4, the R-square for the model was 0.100 which indicates that the 10% of variance in users' use of video-conferencing can be explained by independent factors. Statistics value F=13.045 which is significant at α<0.05, thus the model is capable of predicting the video-conferencing usage. Individualism versus collectivism was found to be a significant factor in increasing video-conferencing use directly, since the effect with a positive value was (β=.242), but not the interaction of social influence and individualism versus collectivism. Hence, individualism versus collectivism is not significant as a moderator. Therefore, the results are not consistent to the effect hypothesized in H2a, but are consistent to the effect hypothesized in H2b.

Table 5: Results of Testing the Direct and Moderating Effect of Power Distance on the Effect of Social Influence on Video-Conferencing Use

Independent factors	Un-standardized coefficient	Std. Error
SI	.321***	.060
PD	-.153*	.069
SI X PD	.000	.072
R^2	0.095	
F	12.359***	

SI= Social influence, PD= power distance, SI X PD= the interaction of social influence and power distance

Significance levels are *** p < .001, ** p < .01, * p < .05

Table 5 shows the model with R-square of 0.095 reflects 9.5% of variance in video-conferencing usage. This can be explained by independent factors. The value F=12.359 is significant which is at α<0.05, therefore the model is capable of predicting video-conferencing use. Social influence is a significant factor to increase the use of video-conferencing, while power distance is a significant factor to directly decrease the use of video conferencing (β= -.153), but not the interaction of social influence and power distance. Hence, power distance is not significant as a moderator. Therefore, the results are not consistent to the effect hypothesized in H3a, but are consistent to the effect hypothesized in H3b.

6. FINDINGS

The findings imply that the provision of more social influence among virtual teams would accelerate the use of video-conferencing. The finding is consistent with [15, 18, 19, and 21], also [20] in e-mail usage. However, this finding is in contrast with [20] in v-mail usage, and [22]. The findings confirm the importance of social influence in accepting and using video-conferencing in the manufacturing firms in Jordan.

The findings also reveal that power distance has a negative direct effect on social influence over the use of video-conferencing. Jordanians are from a low power distance culture, so this conforms to the findings reported by [16]. The finding of negative direct effect of power distance is in line with [28], but is in contrast with [29, 31]. Although power distance succeeds to directly affect the video conferencing usage, it nevertheless fails to moderate the impact of social influence on video-conferencing usage, which is consistent with the finding by [27, 33]. In contrast, this finding is inconsistent with studies carried out by [32, 34].

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A possible reason behind the failure of power distance to play a moderating role could be explained in that the measure of social influence does not separate users from different levels of power (subordinates and superiors). For that reason, it is possible that power distance dimension only moderates the impact of social influence on users in authority (i.e., superiors), as clarified by [33]. Furthermore, it is expected that the virtual team's low power distance values are not worth enough to control the user's perceptions of social influence on video-conferencing usage.

Correspondingly, individualism versus collectivism also has a positive direct effect on video-conferencing use as this study provides that Jordanians are collectivistic. This finding is consistent with the finding reported by [16]. The role of collectivistic values for Jordanians motivates them to conform together to use video-conferencing. This finding is consistent with what was reported by [28], but in contrast with [29]. However, though the collectivistic values of Jordanians succeed to directly affect the video-conferencing usage, it fails to motivate or inhibit the effect of social influence on video-conferencing usage. This finding is consistent with the finding by [27, 33].

The explanation for the non-moderating effect of collectivistic values is due to the different roles played by in-going users (e.g. subordinates) and out-going (e.g. superiors), where in-going users have more impact [33]. Therefore, it is expected that the individualism versus collectivism dimension will be capable of moderating the impact of social influence on in-going users (i.e., subordinates) to use video-conferencing, as explicated by [33]. Furthermore, it is expected that the collectivistic cultural values are not important to make changes on the virtual team's social influence in using video-conferencing.

7. THEORETICAL AND PRACTICAL IMPLICATIONS

Theoretically, this study contributes by adding to the limited theoretical literature on the role of cultural dimensions and social influence in IT acceptance research field. This study also extends the TAM theory into the evaluation of video-conferencing usage, particularly in Jordan. Furthermore, this study carried out a sufficient review with regard to the role of social influence and cultural dimensions, the existing models on IT usage and acceptance. The newly developed conceptual model is applicable for technologies other than video-conferencing, in different contexts.

Practically, the findings provide a guideline for adopting video-conferencing in order to enhance communication among virtual teams in manufacturing firms in Jordan. This paper discovered a wide range of issues such as the social influence of motivation of virtual teams on each other to use video-conferencing. Thus, virtual teams might lead to broadened use of video conferencing, which would increase the number of users of video conferencing. Understanding the significant source of influence for virtual teams to affect each other, can build on diffusion strategies of innovative video-conferencing. Besides, identifying critical and sensitive opinions is the key to gaining benefit of a virtual team's psychology to allude to social influence in the decision-making of technology use. Hence, leaders in manufacturing firms in Jordan require developing good communication with socially influential users in virtual teams and getting them to support video-conferencing usage.

Furthermore, conducting rules and regulations (bureaucratic management) to thrust virtual team's members to use video-conferencing is not useful, since Jordanian cultural values are low power distance, which inhibits the video-conferencing usage Thus, this pattern of IT diffusion should be ignored. Also, manufacturing firms should append effort in enhancing the virtual teams' perceptions that the use of video-conferencing system can lead to gain benefits for the whole community. This would be an effective way to motivate the use of such a system.

8. CONCLUSION AND FUTURE WORK

This study has successfully developed a new conceptual model to address the direct and moderating effect of individualism versus collectivism and power distance cultural dimensions on the relationship between social influence and video-conferencing usage in manufacturing firms in Jordan. The study reveals the valuable role of the social influence in video conferencing usage, and how it is worthy of being examined further in various technologies and contexts. Furthermore, it is critical to examine the direct effect of the cultural dimensions in studying the use of video-conferencing, but not the moderation effect. The conceptual model is

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applicable for further studies in different countries (i.e., cultures), which could lead to different results and findings. Future research should separate users from subordinates and superiors in measuring the effect of individualism versus collectivism and power distance on social influence, since it is expected to lead to different findings. The impact of different cultural dimensions should also be measured, such as masculinity and uncertainty avoidance because the importance of measuring these cultural values has been mentioned in previous studies.

The survey is limited to one national culture only (Jordanian culture). No comparisons were made with other cultures. Furthermore, since this study was limited to a quantitative approach, future researchers are advised to combine both quantitative and qualitative approaches, where they would be able to collect data in depth. Also, the number of items adopted to measure the effect of some constructs might not be sufficient. For example, video-conferencing use was measured based on only two items. This study was limited to the examination of the effects of moderators that were not equipped with multiple-level demographic characteristics such as age, gender, experience, educational level etc. Statistical packages other than SPSS might be more useful for validating the proposed conceptual model in this study. For example, a statistical method such as SEM using AMOS is expected to provide extensive analysis output.

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